

## DEVOPS DAY-05

## JAVA-APPLICATION DEPLOYMENT IN MINIKUBE

## COMMANDS EXECUTED TO EDIT CONFIG FILE IN /.KUBE

```

akshitha@ITP-CG16-19: ~/$ sudo apt-get install openssh-server
The following additional packages will be installed:
  libwrap0 ncurses-term openssh-sftp-server ssh-import-id
Suggested packages:
  molly-guard monkeysphere ssh-askpass ufw
The following NEW packages will be installed:
  libwrap0 ncurses-term openssh-server openssh-sftp-server ssh-import-id
0 upgraded, 5 newly installed, 0 to remove and 28 not upgraded.
Need to get 880 kB of archives.
After this operation, 6861 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 openssh-sftp-server amd64 1:9.6p1-3ubuntu13.8 [37.3 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble/main amd64 libwrap0 amd64 7.6.q-33 [47.9 kB]
Get:3 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 openssh-server amd64 1:9.6p1-3ubuntu13.8 [509 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 ncurses-term all 6.4+20240113-1ubuntu2 [275 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble/main amd64 ssh-import-id all 5.11-0ubuntu2.24.04.1 [10.1 kB]
Fetched 880 kB in 2s (382 kB/s)
(Reading database ... 44033 files and directories currently installed.)
Preparing to unpack .../openssh-sftp-server_1:9.6p1-3ubuntu13.8_amd64.deb ...
Unpacking openssh-sftp-server (1:9.6p1-3ubuntu13.8) ...
Selecting previously unselected package libwrap0:amd64.
Preparing to unpack .../libwrap0_7.6.q-33_amd64.deb ...
Unpacking libwrap0:amd64 (7.6.q-33) ...
Selecting previously unselected package openssh-server.
Preparing to unpack .../openssh-server_1:9.6p1-3ubuntu13.8_amd64.deb ...
Unpacking openssh-server (1:9.6p1-3ubuntu13.8) ...
Created symlink /etc/systemd/system/ssh.service.requires/ssh.socket → /usr/lib/systemd/system/ssh.socket.
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for libc-bin (2.39-0ubuntu4) ...
akshitha@ITP-CG16-19:~$ sudo systemctl enable ssh
Synchronizing state of ssh.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable ssh
Created symlink /etc/systemd/system/ssh.service → /usr/lib/systemd/system/ssh.service.
Created symlink /etc/systemd/system/multi-user.target.wants/ssh.service → /usr/lib/systemd/system/ssh.service.
akshitha@ITP-CG16-19:~$ sudo systemctl start ssh
akshitha@ITP-CG16-19:~$ sudo systemctl restart ssh.service
akshitha@ITP-CG16-19:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
    Loaded: loaded (/usr/lib/systemd/system/ssh.service; enabled; preset: enabled)
    Active: active (running) since Fri 2025-03-21 05:47:55 UTC; 44s ago
    Triggered by: ● ssh.socket
    Docs: man:sshd(8)
           man:sshd_config(5)
    Process: 3147 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
    Main PID: 3149 (sshd)
    Tasks: 1 (limit: 4572)
    Memory: 1.4M (?)
    CGroup: /system.slice/ssh.service
            └─3149 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Mar 21 05:47:55 ITP-CG16-19 systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Mar 21 05:47:55 ITP-CG16-19 sshd[3149]: Server listening on :: port 22.
Mar 21 05:47:55 ITP-CG16-19 systemd[1]: Started ssh.service - OpenBSD Secure Shell server.

```

[illegible]

## Nodes created is listed

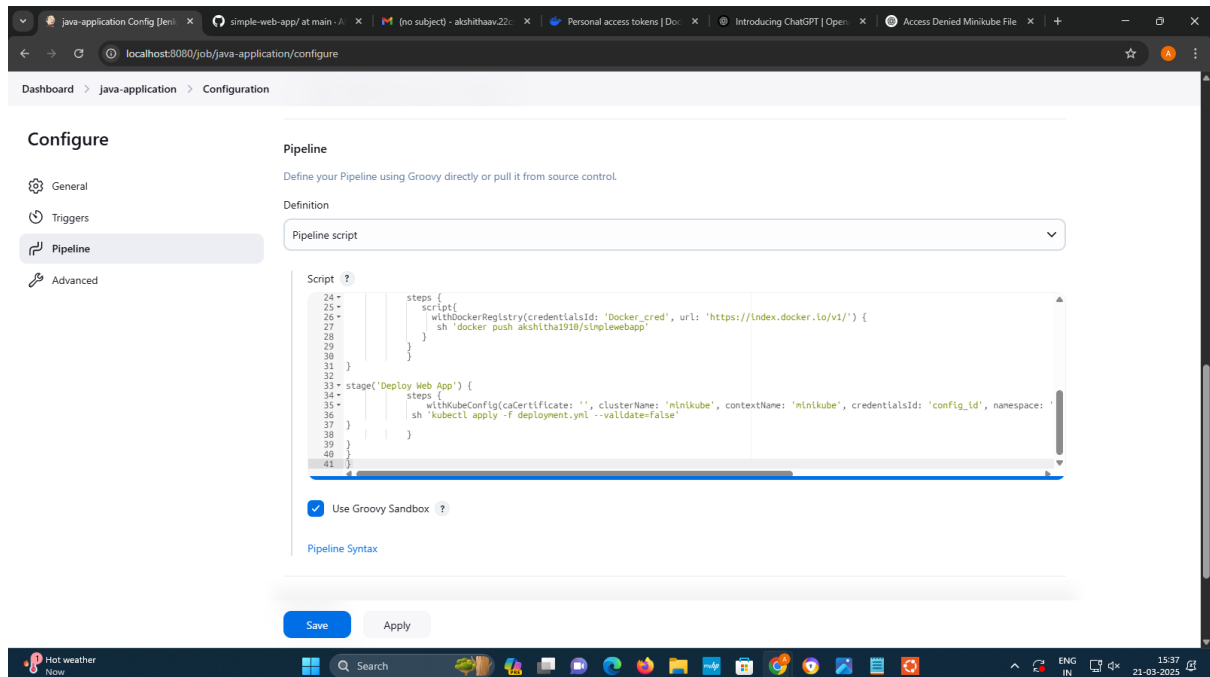
```
akshitha@ITP-CC16-19: ~/kube
akshitha@ITP-CC16-19:~/kube$ minikube start
* minikube v1.35.0 on Ubuntu 24.04 (amd64)
* Using the docker driver based on existing profile
* Starting "minikube" primary control-plane node in "minikube" cluster
* Pulling base image v0.0.46 ...
* Updating the running docker "minikube" container ...
* Preparing Kubernetes v1.22.0 on Docker 27.4.1 ...
* Verifying Kubernetes components...
  - Using image gcr.io/k8s-minikube/storage-provisioner:v5
* Enabled addons: storage-provisioner, default-storageclass
* Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
akshitha@ITP-CC16-19:~/kube$ kubectl get node
NAME      STATUS   ROLES    AGE   VERSION
minikube  Ready    control-plane  2d    v1.32.0
akshitha@ITP-CC16-19:~/kube$
```

## CREATION OF A PIPELINE PROJECT NAMED “java-application”

The screenshot shows the Jenkins Dashboard interface. On the left, there's a sidebar with navigation links: New Item, Build History, Project Relationship, Check File Fingerprint, Manage Jenkins, and My Views. The main area displays a table of builds. The table has columns for Status (S), Icon, Name, Last Success, Last Failure, and Last Duration. There are three builds listed: 'java-application' (status: success, icon: cloud), 'maven' (status: success, icon: sun), and 'simpletomcatapplication' (status: success, icon: cloud). Below the table, there are buttons for 'Build Queue' (No builds in the queue), 'Build Executor Status' (0/2), and 'Cloud Statistics'. The bottom of the dashboard shows the REST API and Jenkins version 2.492.2.

S	W	Name	Last Success	Last Failure	Last Duration
✓	☁	java-application	13 min #8	15 min #7	19 sec
✓	☀	maven	2 days 0 hr #1	N/A	20 sec
✓	☁	simpletomcatapplication	1 day 23 hr #7	1 day 23 hr #6	29 sec

## PIPELINE SCRIPT



## PIPELINE SCRIPT CODE

```
pipeline {
  agent any

  stages {
    stage('scm') {
      steps {
        git branch: 'main', url: 'https://github.com/Akshi1910/simple-web-app.git'
      }
    }
    stage('build') {
      steps {
        sh "mvn clean"
        sh "mvn install"
      }
    }
  }
  stage('build to images') {
    steps {
      script{
        sh 'docker build -t akshitha1910/simplewebapp .'
      }
    }
  }
}
```

```

}
stage('push to hub') {
    steps {
        script{
            withDockerRegistry(credentialsId: 'Docker_cred', url: 'https://index.docker.io/v1/') {
                sh 'docker push akshitha1910/simplewebapp'
            }
        }
    }
}

stage('Deploy Web App') {
    steps {
        withKubeConfig(caCertificate: '', clusterName: 'minikube', contextName: 'minikube',
credentialsId: 'config_id', namespace: '', restrictKubeConfigAccess: false, serverUrl:
'https://192.168.39.226:8443/') {
            sh 'kubectl apply -f deployment.yml --validate=false'
        }
    }
}
}
}
}

```

## DEPLOYMENT FILE

### deployment.yml

```

apiVersion: apps/v1
kind: Deployment
metadata:
  name: webnginx2
  labels:
    name: webnginx2
spec:
  replicas: 1
  selector:
    matchLabels:
      apptype: web-backend

```

```
strategy:
  type: RollingUpdate
template:
  metadata:
    labels:
      apptype: web-backend
  spec:
    containers:
      - name: webnginx2
        image: akshitha1910/simplewebapp:latest
        ports:
          - containerPort: 7070
```

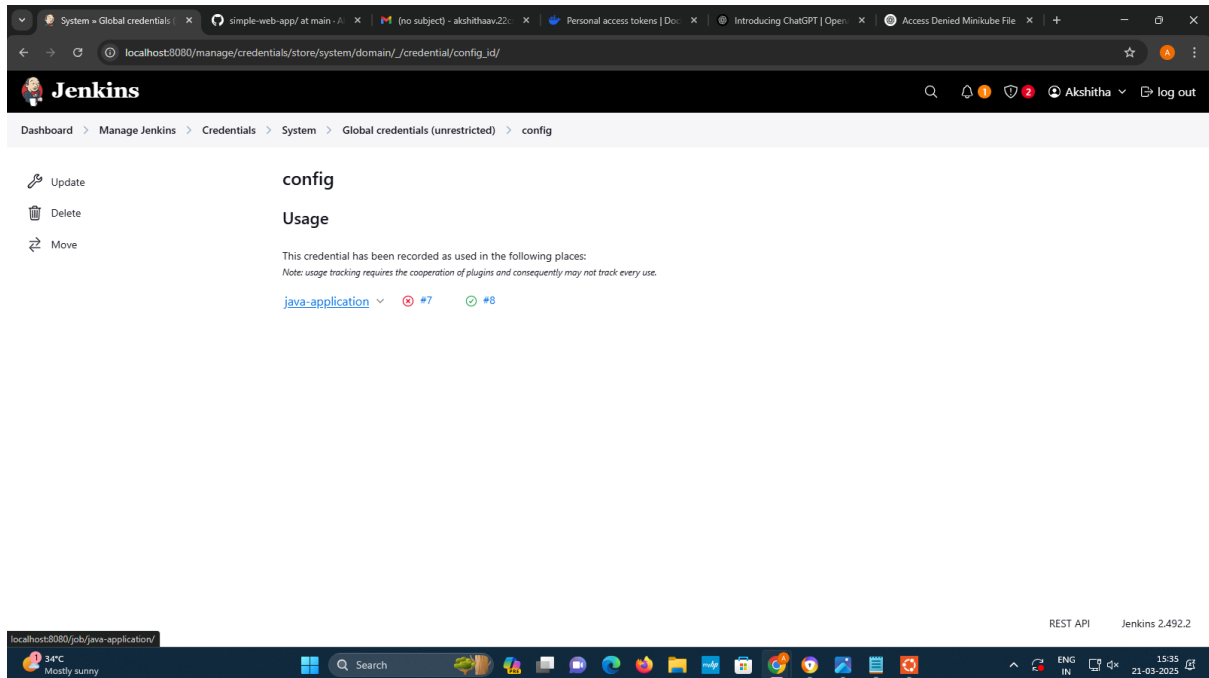
---

```
apiVersion: v1
kind: Service
metadata:
  name: my-service
  labels:
    app: my-service
    type: backend-app
spec:
  type: NodePort
  ports:
    - targetPort: 8080
      port: 7070
      nodePort: 30002
  selector:
    apptype: web-backend
```

deployment.yml file should be present in the project:

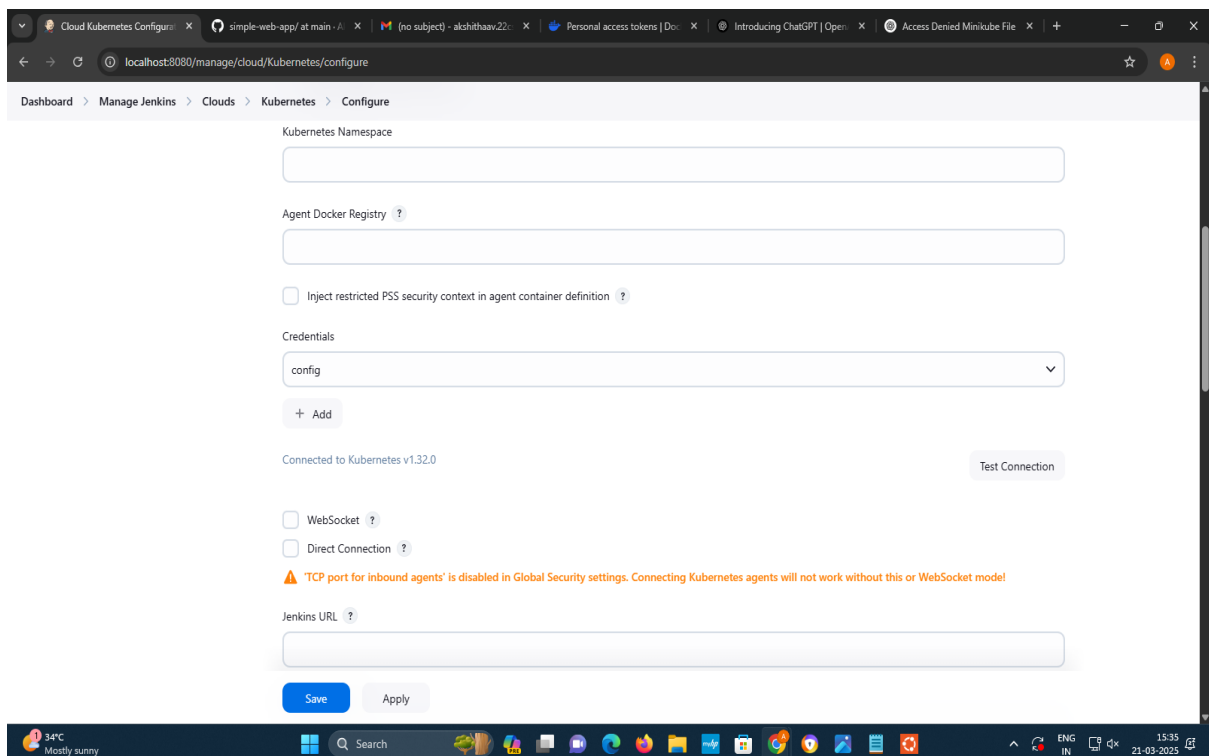
gitlink: <https://github.com/Akshi1910/simple-web-app>

## CREATION OF CREDENTIALS



The screenshot shows the Jenkins web interface at `localhost:8080/manage/credentials/store/system/domain/_/credential/config_id/`. The breadcrumb navigation is `Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted) > config`. On the left, there are three actions: `Update`, `Delete`, and `Move`. The main section is titled `config` and `Usage`. It states: "This credential has been recorded as used in the following places: *Note: usage tracking requires the cooperation of plugins and consequently may not track every use.*" Below this, there is a link `java-application` with a dropdown arrow, and two colored circles with numbers `#7` and `#8`. At the bottom right, it says `REST API` and `Jenkins 2.492.2`. The Windows taskbar at the bottom shows the date `21-03-2025` and time `15:35`.

## CONNECTING TO KUBERNETES

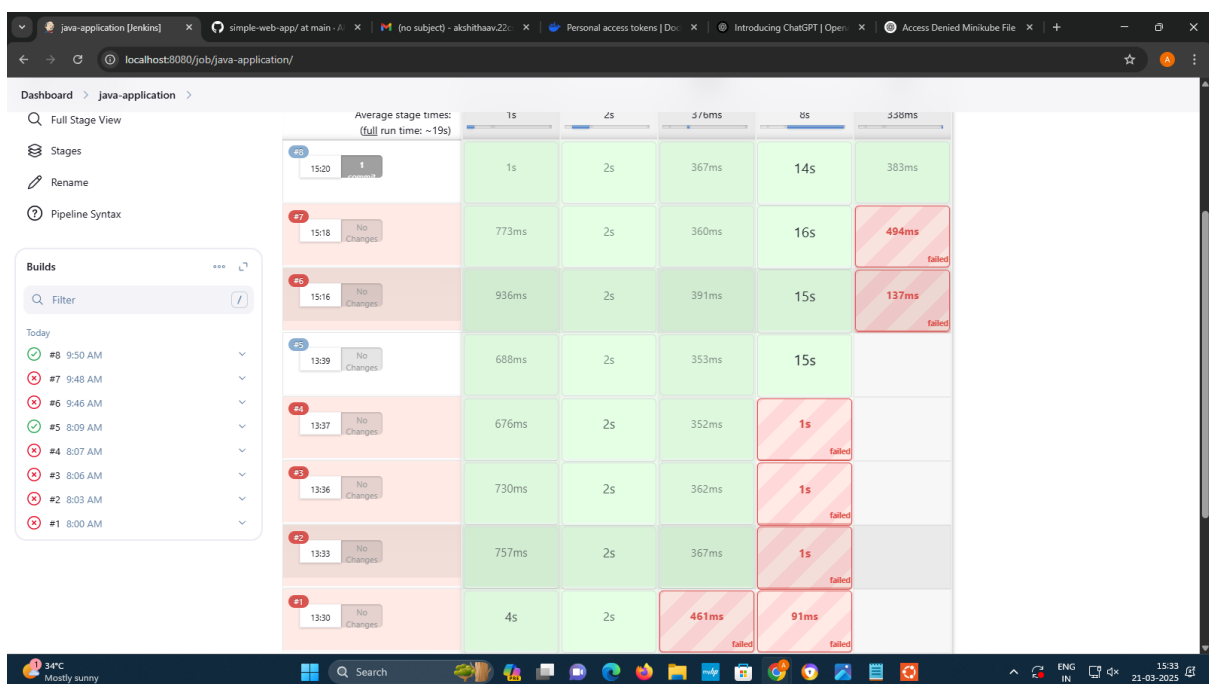
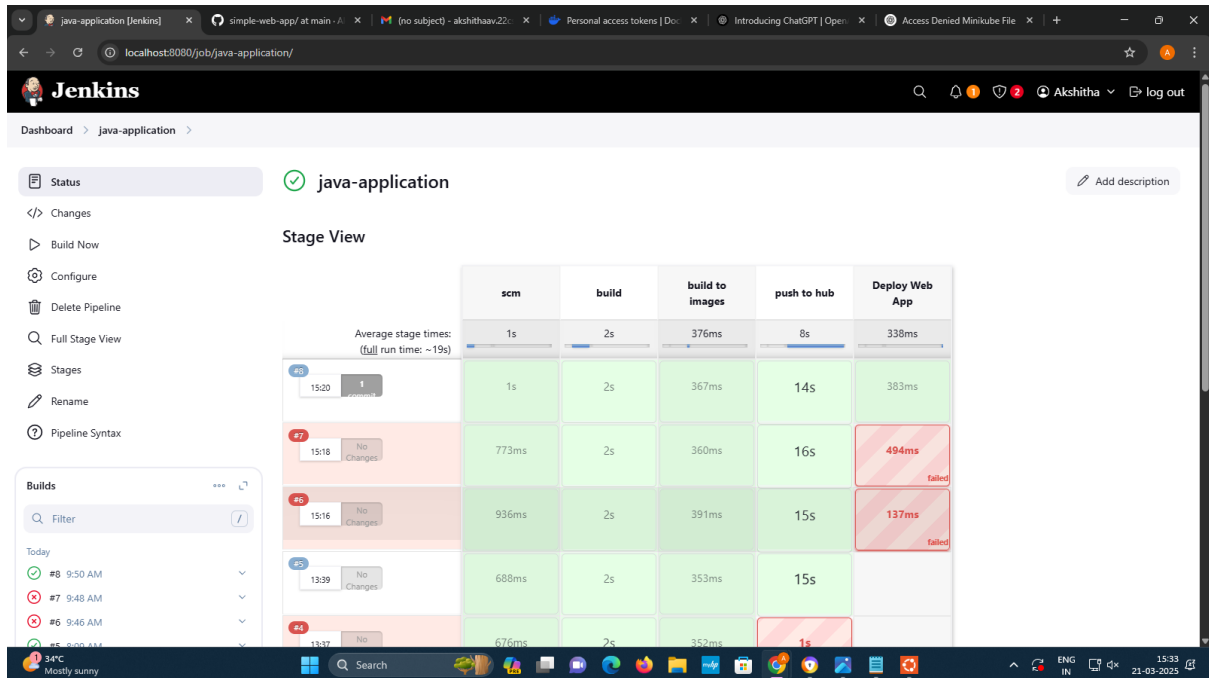


The screenshot shows the Jenkins web interface at `localhost:8080/manage/cloud/Kubernetes/configure`. The breadcrumb navigation is `Dashboard > Manage Jenkins > Clouds > Kubernetes > Configure`. The form contains the following fields and options: 

- `Kubernetes Namespace`: A text input field.
- `Agent Docker Registry`: A text input field with a help icon.
- ☐ `Inject restricted PSS security context in agent container definition` with a help icon.
- `Credentials`: A dropdown menu showing `config` with a `+ Add` button below it.
- `Connected to Kubernetes v1.32.0` with a `Test Connection` button.
- ☐ `WebSocket` with a help icon.
- ☐ `Direct Connection` with a help icon.
- An orange warning message: `⚠️ 'TCP port for inbound agents' is disabled in Global Security settings. Connecting Kubernetes agents will not work without this or WebSocket model!`
- `Jenkins URL`: A text input field with a help icon.
- `Save` and `Apply` buttons at the bottom.

 The Windows taskbar at the bottom shows the date `21-03-2025` and time `15:35`.

## STAGE VIEW OF BUILD



## BUILD SUCCESS

The screenshot shows the Jenkins web interface for a build named 'java-application #8'. The build is in a 'SUCCESS' state, indicated by a green checkmark. The build was initiated by user 'Akshitha' and completed 19 minutes ago, taking 19 seconds. The build details show it was triggered by a Git commit from the repository 'https://github.com/Akshi1910/simple-web-app.git' at revision '837fed54fe87aba876eb01a154c59657398cd159'. The build log shows a single change in 'deployment.yml'. The left sidebar contains various navigation options like 'Status', 'Changes', 'Console Output', 'Edit Build Information', 'Delete build #8', 'Timings', 'Git Build Data', 'Pipeline Overview', 'Pipeline Console', 'Restart from Stage', 'Replay', 'Pipeline Steps', 'Workspaces', and 'Previous Build'. The bottom of the screen shows a Windows taskbar with various application icons and a system clock indicating 15:40 on 21-03-2025.

Dashboard > java-application > #8

**Status** **#8 (Mar 21, 2025, 9:50:44 AM)** [Add description](#) [Keep this build forever](#)

[Changes](#)

[Console Output](#)

[Edit Build Information](#)

[Delete build #8](#)

[Timings](#)

[Git Build Data](#)

[Pipeline Overview](#)

[Pipeline Console](#)

[Restart from Stage](#)

[Replay](#)

[Pipeline Steps](#)

[Workspaces](#)

[Previous Build](#)

**Started by user Akshitha** Started 19 min ago  
Took 19 sec

**This run spent:**

- 6 ms waiting;
- 19 sec build duration;
- 19 sec total from scheduled to completion.

**git** **Revision:** 837fed54fe87aba876eb01a154c59657398cd159  
**Repository:** <https://github.com/Akshi1910/simple-web-app.git>

- refs/remotes/origin/main

**Changes**

1. deployment.yml ([details](#) / [githubweb](#))